

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of: **TANAKA, Yoshihiro**

Group Art Unit: **3633**

Serial No.: **10/588,499**

Examiner: **HERRING, Brent W.**

Filed: **August 4, 2006**

P.T.O. Confirmation No.: **9219**

For: **SHEARING FORCE REINFORCED STRUCTURE AND MEMBER**

**PROPOSED**

**RESPONSE UNDER 37 CFR §1.116**  
**- EXPEDITED RESPONSE -**  
**GROUP ART UNIT 3633**

**MAILSTOP AF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

May \_\_, 2010

Sir:

In response to the Final Office Action dated **February 17, 2010**, please amend the above-identified application as follows:

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks/Arguments** begin on page 11 of this paper.

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (Currently Amended): A shearing force reinforced structure comprising:

an existing reinforced concrete structure object having an inner face side and an outer face side;

a shearing force reinforced member mainly made of a solid wire rod, the solid wire rod being arranged between the inner face side and the outer face side inside a reinforced member insertion hole formed in the existing reinforced concrete structure object between the inner face side and the outer face side; and

a filler filled in the reinforced member insertion hole, wherein

the reinforced member insertion hole comprises a general part having an inner diameter larger than a diameter of the wire rod, and a base end width broadening part formed at a base end of the reinforced member insertion hole and having an inner diameter larger than the general part; and

the general part and the base end width broadening part are both formed entirely within the existing reinforced concrete structure object.

Claim 2 (Original): The shearing force reinforced structure according to claim 1, wherein a top end width broadening part having an inner diameter larger than the general part is formed at a top end of the

reinforced member insertion hole.

Claim 3 (Original): The shearing force reinforced structure according to claim 1, wherein the shearing force reinforced member comprises a shearing force reinforcing bar of the wire rod; and a base end fixation member that is formed at a base end of the shearing force reinforcing bar and of which a section shape is larger than a reinforcing bar diameter of the shearing force reinforced reinforcing bar.

Claim 4 (Original): The shearing force reinforced structure according to claim 3, wherein at a top end of the shearing force reinforcing bar is formed a top end fixation member of which a section shape is larger than a reinforcing bar diameter of the shearing force reinforced reinforcing bar.

Claim 5 (Original): The shearing force reinforced structure according to claim 1, wherein an adhesion strength of the filler is not less than  $60 \text{ N/mm}^2$  in a case that the wire rod is a deformed reinforcing bar.

Claim 6 (Original): The shearing force reinforced structure according to claim 1, wherein the filler is a fiber reinforced cementitious composite material where a fiber is mixed in a cementitious matrix.

Claim 7 (Original): The shearing force reinforced structure according to claim 6, wherein the fiber reinforced cementitious composite material is formed by: blending a fiber, of which a diameter is 0.05 to

0.3 mm and a length is 8 to 16 mm, by around 1 to 4% for a volume of a cementitious matrix obtained by mixing cement, an aggregate of which a maximum particle diameter is not more than 2.5 mm; a pozzolan reaction particle of which a diameter is 0.01 to 15 mm; and at least one kind of super plasticizer; and water.

Claim 8 (Withdrawn): The shearing force reinforced structure according to claim 1, wherein a fiber sheet is adhered to a surface of the reinforced concrete structure object; and the fiber sheet and the shearing force reinforced member are integrated.

Claim 9 (Withdrawn): The shearing force reinforced structure according to claim 3, wherein a fiber sheet is adhered to a surface of the reinforced concrete structure object and that of the base end fixation member, and the fiber sheet and the shearing force reinforced member are integrated.

Claim 10 (Currently Amended): A shearing force reinforced structure comprising:

- an existing reinforced concrete structure object having an inner face side and an outer face side;
- a first shearing force reinforced member arranged inside a first reinforced member insertion hole and a second shearing force reinforced member arranged inside a second reinforced member insertion hole formed in the existing reinforced concrete structure object; and
- a filler filled in the first reinforced member insertion hole and the second reinforced member insertion hole,

wherein the first shearing force reinforced member comprises a first wire rod, and a first base end

fixation member formed at a base end of the first wire rod ~~and having a width larger than a diameter of the first wire rod as measured at a point along its length having the maximum diameter~~, at a top end of the first shearing force reinforced member is formed a first top end fixation member ~~having a width larger than the diameter of the first wire rod as measured at a point along its length having the maximum diameter~~, and wherein

the first base end fixation member and the first top end fixation member are arranged within the first reinforced member insertion hole between the inner face side and the outer face side of the existing reinforced concrete structure object; and

the first base end fixation member and the first top end fixation member have section shapes larger than a section shape of the first wire rod at any location along the first wire rod.

Claim 11 (Previously Presented / Allowed): A shearing force reinforced structure comprising:  
an existing reinforced concrete structure object having an inner face side and an outer face side;  
a first shearing force reinforced member arranged inside a first reinforced member insertion hole  
and a second shearing force reinforced member arranged inside a second reinforced member insertion hole  
formed in the existing reinforced concrete structure object; and

a filler filled in the first reinforced member insertion hole and the second reinforced member insertion hole,

wherein the first shearing force reinforced member comprises a first wire rod, and a first base end fixation member formed at a base end of the first wire rod and having a width larger than a diameter of the

first wire rod, at a top end of the first shearing force reinforced member is formed a first top end fixation member having a width larger than a diameter of the first wire rod, and the first base end fixation member and the first top end fixation member are arranged within the first reinforced member insertion hole between the inner face side and the outer face side of the existing reinforced concrete structure object, and

wherein the first reinforced member insertion hole comprises a first general part having an inner diameter larger than a diameter of the first wire rod, and a first base end width broadening part formed at a base end of the first reinforced member insertion hole and having an inner diameter larger than the first general part.

Claim 12 (Original / Allowed): The shearing force reinforced structure according to claim 11, wherein at a top end of the first reinforced member insertion hole is formed a first top end width broadening part having an inner diameter larger than the first general part.

Claim 13 (Previously Presented / Allowed): A shearing force reinforced structure comprising:  
an existing reinforced concrete structure object having an inner face side and an outer face side;  
a first shearing force reinforced member arranged inside a first reinforced member insertion hole  
and a second shearing force reinforced member arranged inside a second reinforced member insertion hole formed in the existing reinforced concrete structure object; and

a filler filled in the first reinforced member insertion hole and the second reinforced member insertion hole,

wherein the first shearing force reinforced member comprises a first wire rod, and a first base end fixation member formed at a base end of the first wire rod and having a width larger than a diameter of the first wire rod, at a top end of the first shearing force reinforced member is formed a first top end fixation member having a width larger than a diameter of the first wire rod, and the first base end fixation member and the first top end fixation member are arranged within the first reinforced member insertion hole between the inner face side and the outer face side of the existing reinforced concrete structure object,

wherein the second shearing force reinforced member comprises a second wire rod, and a second base end fixation member formed at a base end of the second wire rod and having a width larger than a diameter of the second wire rod, and

wherein the first base end fixation member has a width larger than that of the second base end fixation member.

Claim 14 (Canceled)

Claim 15 (Original / Allowed): The shearing force reinforced structure according to claim 13, wherein at a top end of the second shearing force reinforced member is formed and a second top end fixation member having a width larger than a diameter of the second wire rod.

Claim 16 (Withdrawn): The shearing force reinforced structure according to claim 10, wherein the reinforced concrete structure object comprises a rahmen structure, and the first reinforced member insertion

hole is formed at a corner of the reinforced concrete structure object.

Claim 17 (Previously Presented): The shearing force reinforced structure according to claim 10, wherein in the first base end fixation member, at a base end of the first wire rod is fixed a plate member configured with a width not less than 5 times and not more than 20 times a diameter of the first wire rod.

Claim 18 (Withdrawn): The shearing force reinforced structure according to claim 10, wherein a fiber sheet is adhered to an inner face of the reinforced concrete structure object, and the fiber sheet is integrated with the first wire rod.

Claim 19 (Withdrawn): The shearing force reinforced structure according to claim 10, wherein a fiber sheet is adhered to an inner face of the reinforced concrete structure object, and the fiber sheet is adhered to a surface of the reinforced concrete structure object and that of the first base end fixation member of the first wire rod and is integrated.

Claim 20 (Currently Amended): A shearing force reinforced member arranged inside a reinforced member insertion hole formed in an existing reinforced concrete structure object between an inner face side and an outer face side of said reinforced concrete structure, the member comprising:

a solid wire rod having a length shorter than a total length of the reinforced member insertion hole and which is formed in the existing reinforced concrete structure object, the solid wire rod being arranged



within the reinforced member insertion hole between the inner face side and the outer face side; and  
a base end fixation member and a top end fixation member respectively having width sizes larger than a diameter of the solid wire rod and respectively fixed at a base end and top end of the solid wire rod.

Claim 21 (Original): The shearing force reinforced member according to claim 20, wherein a width size of the top end fixation member is formed to be 120% to 250% of a diameter of the wire rod.

Claim 22 (Original): The shearing force reinforced member according to claim 20,  
wherein at a top end of the wire rod a male thread member is integrally formed, and  
wherein the top end fixation member is configured with a steel plate of which a shape is a circle or a polygon, a thickness size is 80% to 120% of a diameter of the wire rod, and a width size is 200% to 300% of the diameter of the wire rod; a female thread is formed in the steel plate; and by screwing the male thread member of the wire rod into the female thread, the top end fixation member is fixed at the top end of the wire rod.

Claim 23 (Original): The shearing force reinforced member according to claim 20,  
wherein at a top end of the wire rod is processed a male thread, and  
wherein the top end fixation member is configured with a steel plate of which a shape is a circle or a polygon, a thickness size is 80% to 120% of a diameter of the wire rod, and a width size is 200% to 300% of the diameter of the wire rod; a female thread is formed in the steel plate; and by screwing the male thread

of the wire rod into the female thread, the top end fixation member is fixed at the top end of the wire rod.

Claim 24 (Original): The shearing force reinforced member according to claim 20,  
wherein the wire rod is configured with a thread reinforcing bar, and  
wherein the top end fixation member is configured with a steel plate of which a shape is a circle or a polygon, a thickness size is 80% to 120% of a diameter of the wire rod, and a width size is 200% to 300% of the diameter of the wire rod; a female thread is formed in the steel plate; and by screwing the wire rod into the female thread, the top end fixation member is fixed at a top end of the wire rod.

Claim 25 (Previously Presented): The shearing force reinforced member according to claim 20,  
wherein in the base end fixation member, at a base end of the wire rod is fixed a steel plate of which a shape is a circle or a polygon, a thickness size is 30% to 120% of a diameter of the wire rod, and a width size is 130% to 300% of a diameter of the wire rod.

Claim 26 (Previously Presented): The shearing force reinforced structure according to claim 10, wherein in the first base end fixation member, at a base end of the first wire rod is fixed a plate member configured with a width not less than 10 times and not more than 15 times a diameter of the first wire rod.

**REMARKS**

The allowance of Claims 11-13 and 15 is acknowledged. It is believed that this response is fully responsive to the Office Action mailed February 17, 2010.

In the Office Action, Claim 10 is rejected under 35 U.S.C. §102(b) as being anticipated by Ishibashi et al., (JP 2003-113673). Reconsideration and removal of this rejection are respectfully requested in view of the following remarks.

The Office Action alleges that JP '673 discloses a shearing force reinforced structure having an existing reinforced concrete structure object (9); a first shearing force reinforced member (13) arranged inside a first reinforced member insertion hole and a second shearing force reinforced member arranged inside a second reinforced member insertion hole (2, 12), formed in the reinforced concrete structure object; and a filler (6) filled in the first reinforced member insertion hole and the second reinforced member insertion hole, wherein the first shearing force reinforced member is a first wire rod (13) as measured at a point along its length having the maximum diameter, and a first base end fixation member (the protruding band on the base end of the rod, see FIG. 3) formed at a base end of the first wire rod as measured at a point along its length having the maximum diameter and having a width larger than a diameter of the first wire rod.

In a telephone call to the Examiner, it was confirmed that the Examiner is referring to end "ribs" of the 13 "ribs" shown on rod (13) and not component (5), shown in FIG. 3 of JP'673.

With respect to Claim 10, it is respectfully submitted that the band ("protruding band") near

the base end in FIG. 3 of Ishibashi et al. is not a base end as now defined, but a wire rod having deformed portions along its length and it is not relevant to the present base end (or top end). Element (13) in FIG. 3 of Ishibashi et al. shows a deformed reinforcing rebar as recited in the specification (see page 3, Example 2 of Ishibashi et al.), and it is the same as the rebar shown in present drawings (e.g., FIG. 3) of the present invention. It is respectfully submitted that element (13) of Ishibashi et al. is different from the base end fixation member as presently claimed.

In view of the amendment to Claim 10 and the above remarks, removal of this rejection is respectfully requested.

In the Office Action, Claims 1, 3, 4, 20, 21 and 25 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Osaka, JP7238690. Reconsideration and removal of the rejection are respectfully requested in view of the present claim amendments and the following remarks.

It is respectfully submitted that the invention of Osaka is not for the purpose of a shearing force reinforcement, but for the purpose of installing an anchor pin so that a mortar layer does not peel off in forming the surface of a concrete skeleton. As seen from FIGS. 5-9 and 13-14, there exists a gap for filling an epoxy resin between the concrete skeleton and the mortar layer. From the drawings, although the shape of a shearing force reinforcing member is similar to a drilled hole shape, the invention of Osaka is for the purpose of preventing a peel-off, whereas, the present invention is for the purpose of a shearing force reinforcement.

Claims 1 and 20 are presently amended to more clearly define the shearing force reinforced structure, which includes an existing reinforced concrete structure object, in order to distinguish over the device of Osaka.

In view of the amendment to Claims 1 and 20, and the above remarks, removal of this rejection is respectfully requested.

In the Office Action, Claims 2, 5, 22-24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osaka ('690) in view of Tuska, (U.S. Patent No. 3,599,379). Reconsideration and removal of the rejection are respectfully requested in view of the present claim amendments and the following remarks.

Claims 2 and 5 depend from Claim 1, which is discussed above, and Claims 22-24 depend from Claim 20, which is discussed above.

In view of the amendments to Claims 1 and 20 and the above remarks, removal of this rejection is respectfully requested.

In the Office Action, Claims 6 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Osaka in view of Rossi, (U.S. Patent No. 6,860,935). Reconsideration and removal of the rejection are respectfully requested in view of the present claim amendment and the following remarks.

Claims 6 and 7 depend from Claim 1, which is discussed above.

In view of the amendment to Claim 1 and the above remarks, removal of this rejection is respectfully requested.

In the Office Action, Claims 17 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ishibashi et al., JP 2003-113673 in view of Andraet et al., (U.S. Patent No. 5,867,960). Reconsideration and removal of the rejection are respectfully requested in view of the present claim amendment and the following remarks.

Claim 17 depends from Claim 10, which is discussed above.

In view of the amendment to Claim 10 and the above remarks, removal of this rejection is respectfully requested.

In view of the above remarks, Claims 1-7, 10, 17 and 20-26 as well as allowable Claims 11-13 and 15 are believed to be patentable and in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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Response to Office Action mailed February 17, 2010

In the event that this paper is not timely filed, the Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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